

# (12) UK Patent Application (19) GB (11) 2 168 035 A

(43) Application published 11 Jun 1986

(21) Application No 8527935

(22) Date of filing 13 Nov 1985

(30) Priority data

(31) 8428595

(32) 13 Nov 1984

(33) GB

(71) Applicant  
Leonard Gordon Cook,  
Whitehall Farm, Fobbing, Stanford Le Hope,  
Essex SS17 9HN

(72) Inventor  
Leonard Gordon Cook

(74) Agent and/or Address for Service  
Carpmaels & Ransford, 43 Bloomsbury Square,  
London WC1A 2RA

(51) INT CL<sup>4</sup>  
A45C 5/14

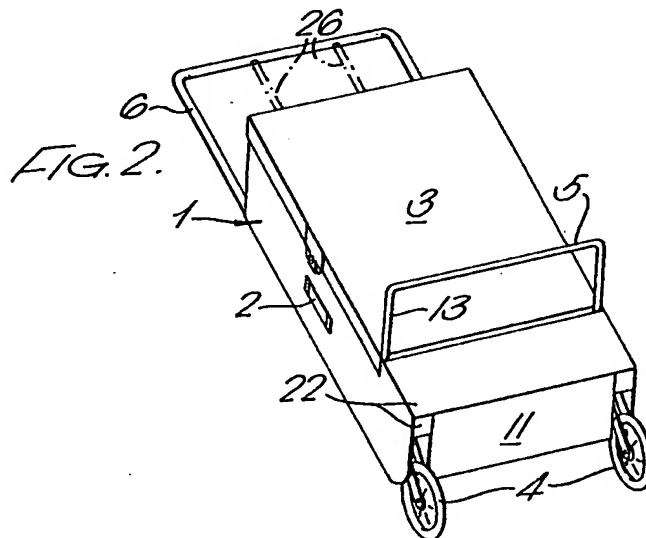
(52) Domestic classification (Edition H):  
B8P W

(56) Documents cited  
GB A 2135638 US 4254850  
GB 1444998 US 3141680  
GB 0655641 US 2510754

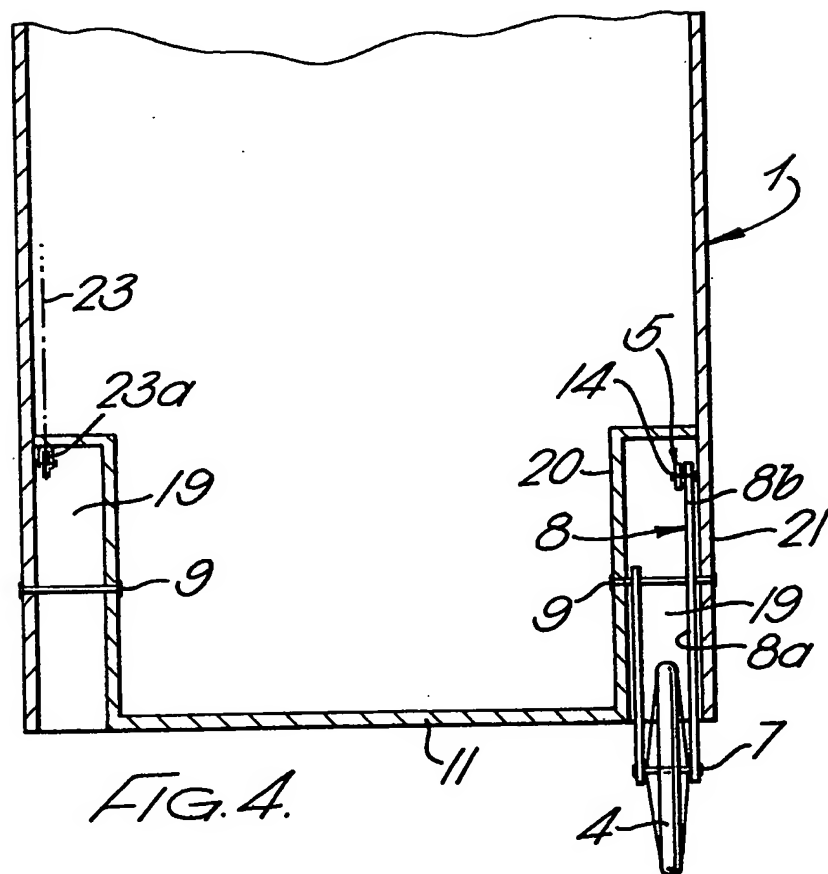
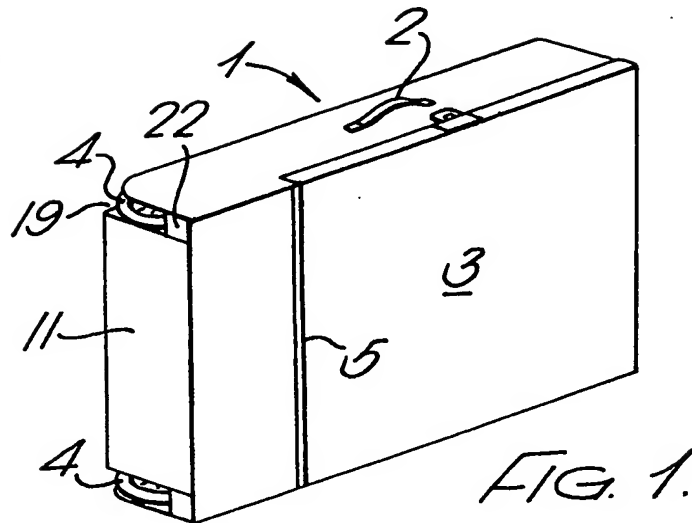
(58) Field of search  
B8P  
Selected US specifications from IPC sub-class A45C

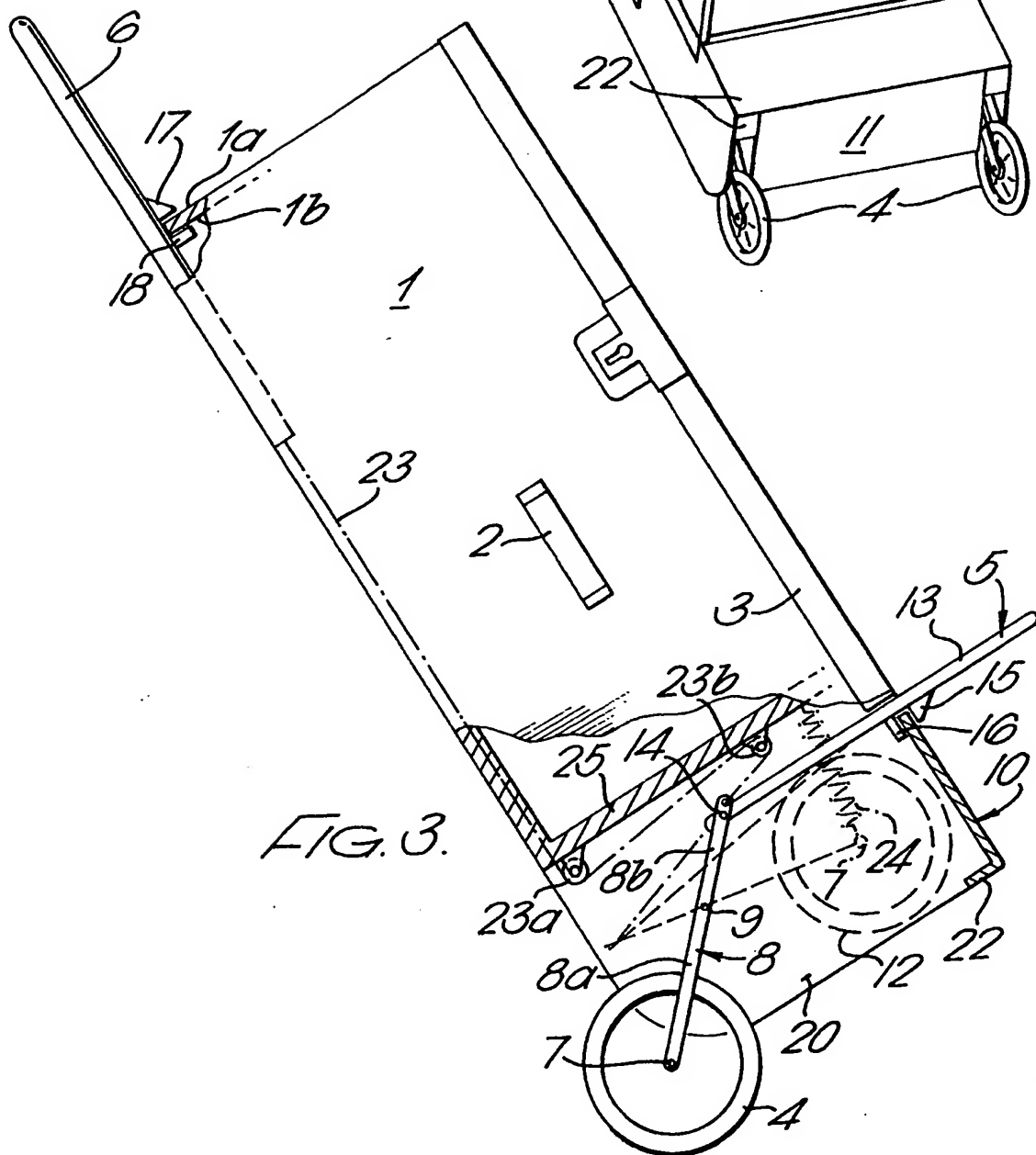
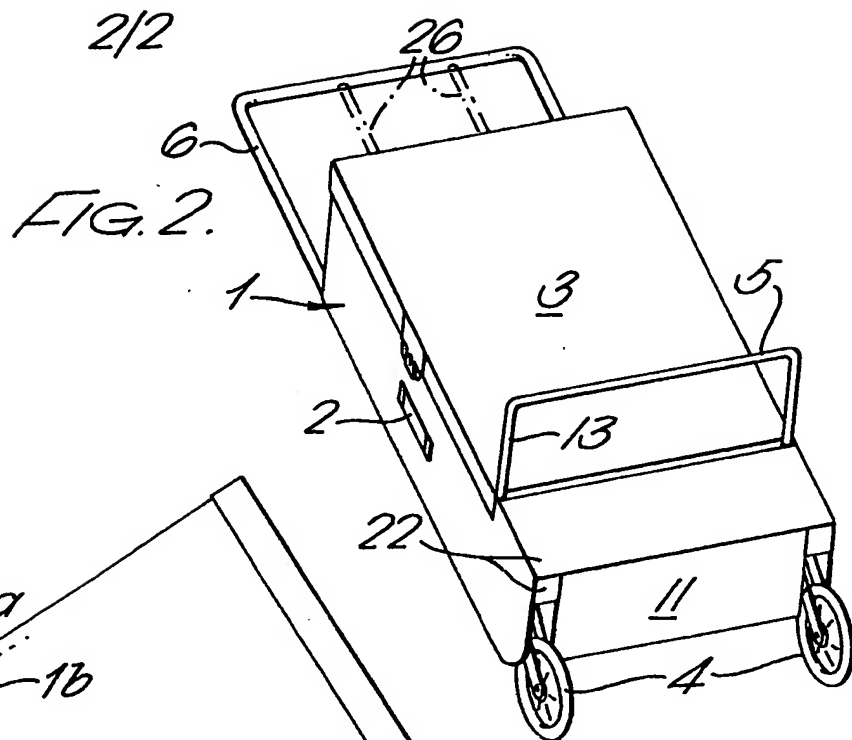
## (54) Portable carrier

(57) A portable carrier, such as a suitcase, is provided with wheels 4 which can be moved between retracted and extended positions. The wheels 4 are mounted on pivoted levers 8 which are interconnected by means of an actuating member 5. The actuating member 5 is extended away from the body 1 of the suitcase to move the wheels 4 into their extended positions, the actuating member 5 then serving as a further support for articles to be carried.



1/2





## SPECIFICATION

## Portable carrier

5 This invention relates to a portable carrier, such as a suitcase or shopping bag.

It is known to provide a suitcase with integral wheels or rollers (at one end) and a handle (at the other end) for guidance. However, wheels or rollers of a small diameter do not provide smooth transport, particularly over rough ground. If wheels of larger diameter were fixed to the suitcase, they would constitute a nuisance when travelling, besides spoiling the appearance of the case.

15 Conventional shopping bags are mounted on a frame provided with wheels, but such a frame would constitute a nuisance when transporting the bag under conditions of e.g. air or road travel. Moreover, the bag could become detached from the frame.

The present invention seeks to avoid such problems.

In its broadest aspect, the invention provides a portable carrier comprising a body adapted to carry articles, wheels mounted on the body for movement between a retracted position, in which they are stored, and an extended position in which they support the body for movement on the ground, and a handle or equivalent means for guidance.

Advantageously, the wheels can have a relatively large diameter to facilitate transport, since they can be retracted to avoid being a nuisance and to avoid becoming damaged when they are not in use. Moreover, the wheels do not detract from the appearance of the carrier when they are retracted.

According to a preferred arrangement wherein the invention is embodied in an elongate carrier (such as a suitcase of substantially rectangular cross section), wheels are provided at each corner of one end of the carrier, each wheel being supported by a mounting which is pivotally attached to the body. The pivot point of each mounting is suitably spaced (by different distances) from adjacent sides of the body so as to enable the wheels to be stored substantially within the body in the retracted position, and to be extended from the body to support the carrier clear of the ground. Whilst the wheels could be separately extended, they are preferably interconnected so that they can be simultaneously extended.

Preferably, the wheels are supported on a mounting structure which is connected to means for causing the wheels to be extended and/or retracted. Preferably, such means causes positive extension of the wheels. For example, such means may comprise a linkage connecting the guidance handle to the wheel mounting structure, the guidance handle being of a retractable form so that when it is extended, the wheels move into their extended position. The linkage may include a cable which is connected at one end to the retractable handle and which passes over a pulley system before being connected, at its other end, to the wheel mounting structure. Alternatively, the lat-

ter-mentioned means may comprise a member which is extended away from the body to cause the wheels to move into the extended position, the member then serving as a further support for articles to be carried (i.e. so that the carrier can also be used in the manner of a trolley to support a further article, such as a suitcase). According to another arrangement, a retractable handle causes both the wheels and the member which serves as a further support for articles to be carried to move into respective extended portions. Locking means may be provided to maintain the wheels and/or the further supporting member in their extended positions. Whether or not a retractable handle is linked to the wheels, such a handle is preferably secured by locking means when extended.

A preferred embodiment of the invention will now be described with reference to the accompanying drawings, in which:

70 *Figure 1* is a perspective view of a suitcase which is fitted with wheels and a guidance handle, both of which are in their retracted positions.

75 *Figure 2* is a perspective view, of the part in section, of the suitcase of *Figure 1* with the handle and wheels extended.

80 *Figure 3* is a side elevation, in section, showing the construction of the suitcase in more detail, and *Figure 4* is a detailed elevational view of one of the wheels.

Referring to the drawings, a suitcase 1 has a carrying handle 2 and an openable lid 3. Wheels 4 are provided, one at each side and at one end of the suitcase, the wheels being mounted for movement between retracted (*Figure 1*) and extended (*Figure 2*) positions. A retractable handle 6 is attached to the other end of the suitcase and is provided for guidance when the wheels 4 are in their extended position.

As shown in *Figures 3* and *4*, each wheel 4 is rotatably mounted on an axle 7, the axle being supported by arm 8a of a pivoted lever 8. Lever 8 is supported by a pivot 9 which is fixed to confronting wall portions 20, 21 (*Figure 4*) partly defining a recess 19 for the wheel 4. The pivot 9 is positioned at a greater distance from the major surface 10 of the suitcase than from its end wall 11, whereby the wheel can be retracted into the suitcase (as shown by the broken line 12), but also extended to provide sufficient ground clearance.

A substantially U-shaped member 5 (which is optional) has limbs 13 which are pivotally attached (at 14) to respective arms 8b of lever 8. When the wheels are extended, member 5 extends away from the body of the suitcase and, in this position, member 5 serves as a further support for articles to be carried. In order to maintain the wheels 4 in a suitably extended position, each side limb of handle 6 (which is hollow) is provided with a spring-loaded catch 17 (e.g. like the type used on umbrellas or tentpoles) for engaging the external surface 1a of the body 1 as the handle 6 is extended. A stop 18, attached to handle 6, engages an internal surface 1b of body 1 when the catch 17 engages the external surface 1a. Hence, handle 6 is prevented from moving back into the body by

catches 17 and is also prevented from moving out of the body by stops 18.

In an alternative arrangement (see below), or to provide more stability, member 5 (i.e. limb 13, which may be hollow) is provided with a spring-loaded catch 15 and a stop 16 similar to the catch 17 and stop 18 similar to handle 6.

According to one arrangement, one end of a cable 23 is attached to handle 6 and its other end is connected to arm 8b of lever 8. The cable 23 passes over pulleys or rollers 23a, 23b. When the handle 2 is extended (as shown), the cable 13 causes lever 8 to pivot thereby extending the wheels 4 and member 5. Catches 17 (fitted one on either side of the handle 6) prevent handle 6 from moving back into the body 1 when the wheels are extended and hence also serve to lock the wheels 4 and member 5 in their respective extended positions. In order to retract the wheels 4, the catches 17 are depressed to allow the handle 6 to be pushed into the body 1. Alternatively, after depressing the catches 17, the wheels 4, or member 5 can be pushed into the body 1 to achieve the same effect.

According to another arrangement, the handle 6 need not be connected (by cable 23) to lever 8, because member 5 can be pulled out in order to extend the wheels and pushed in to retract the wheels. In this arrangement, the catch 15 and stop 16 are required in order to maintain member 5 and wheels 4 in their respective extended positions. In order to retract the wheels, the catch 15 is depressed and member 5 is pushed in towards the body.

If both sets of catches are employed in the arrangement shown in Figure 2, the wheels can be retracted by first depressing catches 17 to allow handle 6 to be pushed slightly into the body 1 and then depressing catch 15 to enable member 5 to be pushed into the body.

When the wheels are retracted, both the member 5 and the handle 6 fit neatly and closely adjacent the contours of the suitcase (as shown in Figure 1). A return spring or springs may be fitted to maintain the wheels in their retracted position and/or to assist wheel retraction. Figure 2 schematically illustrates one of two springs 24 (fitted at each side of the body) which extends between a wall member 25 of body 1 and axle 7. For greater clarity, this spring has only been shown in the retracted position. Alternatively, a spring or springs may be fitted between body 1 and arm or arms 8b of lever 8 to achieve the same effect.

Instead of using the sliding handle 6 (shown in Figure 2), the handle 6 may be either unfolded from a stored position against body 1, or telescopically extended. In such cases, a suitable linkage may connect the handle to the wheels, or no linkage may be employed where member 5 is used to extend and retract the wheels.

Instead of providing just one locking position for either the wheels 4, or handle 6, the catch 15 (or 17) and stop 16 (or 18) may be replaced by (e.g.) a ratchet device (not shown), which enables any one of a plurality of locking positions to be used for re-

spectively adjusting the positions of the wheels 4 and/or the handle 6 (e.g. to suit persons of different statures).

Figure 4 illustrates in more detail the way in which each wheel is accommodated in a recess 19 provided at opposite corners of the suitcase. Each recess 19 is partly covered by portions 22 (to improve the appearance of the suitcase) which is fixed to the body 1. Alternatively, the portions 22 may be replaced (or supplemented) by a pair of confronting brush strips (not shown) which gives the appearance of a closure whilst allowing the wheel 4 to pass through (between the brushes) when extended. A further alternative is to provide a retractable strip (not shown), e.g. a roller-type cover which is retracted by a spring-driven reel. The use of either brush strips, or a retractable strip would enable the full length of the opening of each recess 19 to be covered to improve the appearance of the suitcase still further.

When the wheels are retracted, all that is visible from the front of the suitcase are the openings of the recesses from which the wheels extend (but these openings may be covered as described above). It will be appreciated (from Figure 4) that the recesses accommodate the wheels whilst conserving the space within the suitcase.

The above-described arrangements have the advantage of providing positive displacement of the wheels when either the handle 6, or the member 5 are pulled out. Other arrangements, e.g. including rigid rods and/or levers, may be employed to provide positive displacement of the wheels when they are both extended and returned by operating some form of actuator. In any arrangement, two catches (15, 17) may be preferred for greatest stability, although only one catch may suffice.

In order to provide further support for hand luggage (or the like) which is carried on the upper end of the body 1, a pair of spaced rods 26 (shown in chain line in Figure 3) are attached to the horizontal portion of handle 6 and extend downwardly at the rear of body 1. These rods can be housed in channels in body 1, or otherwise slidably supported by guides (not shown) so that they are stored, out of sight, when the handle 6 is retracted.

The suitcase (body 1) may be stood up on its front lower corner and wheels 4, when the wheels are extended, by pushing handle 6 forwardly. In order to stop the suitcase from tipping too far forwardly, either the geometry of member 5 and lever 8 (i.e. their respective lengths, shapes, points of attachments and positions of pivots 9, 14) may be altered so as to cause the wheels 4 to project more rearwardly than as shown in Figure 2. Alternatively, or in addition, the lower portion of body 1 may be extended so that end wall 11 is further away from wall member 25 (than as shown in Figure 2). Such modifications have the effect of providing less ground clearance.

Instead of using coil springs (e.g. 24) to assist with wheel retraction, a torsion spring (not shown) may be fitted around pivot 14 so as to act between member 5 and arm 8b of lever 8. Such springs may be fitted at each side.

Whilst the above embodiment of the invention has been described with regard to a suitcase, it is clear that the principles of the invention may be employed with other portable carriers, e.g. a shopping bag. Moreover, other changes and modifications may be made to the exemplary embodiments described herein without departing from the scope of the invention as defined by the appended claims.

10

#### CLAIMS

1. A portable carrier comprising a body adapted to carry articles, wheels mounted on the body for movement between a retracted position, in which they are stored, and an extended position in which they support the body for movement on the ground, and a handle or equivalent means for guidance.
2. A carrier according to claim 1, wherein each wheel mounting comprises a lever having a pivot point which is spaced by different distances from adjacent sides of the body to enable the respective wheels to be stored substantially within the body in the retracted position, and to be extended from the body to provide ground clearance.
3. A carrier according to claim 1 or 2 wherein the wheels are interconnected by means of a member which is operated to move the wheels between the retracted and extended positions.
4. A carrier according to claim 3 in which the member is extended away from the body to cause the wheels to move into the extended position, the member then serving as a further support for articles to be carried.
5. A carrier according to claim 4, wherein said member is pushed towards the body to move the wheels into their retracted position, said member then fitting closely adjacent the contours of the carrier.
6. A carrier according to claim 1 or 2, wherein the handle is movable between stored and extended positions and wherein the wheel mounting structure is connected to the handle by a linkage for causing the wheels to move into their extended position when the handle is extended.
7. A carrier according to claim 6 and further including a member which is connected to said linkage and which extends from the body when the handle is extended, the member then serving as a further support for articles to be carried.
8. A carrier according to any one of the preceding claims, wherein the carrier is elongate, said wheels being provided one at each side of one end of the body.
9. A carrier according to claim 6 wherein the wheels are retracted into recesses at the sides of the body in order to conserve space within the body.
10. A carrier according to any one of the preceding claims including means to lock the wheels in their extended position.
11. A carrier according to any one of the preceding claims and which is provided in the form of a suitcase having a carrying handle.

12. A portable carrier substantially as herein described with reference to the accompanying drawings.

---

Printed in the UK for HMSO, 08818935, 4/86, 7102.  
Published by The Patent Office, 25 Southampton Buildings, London,  
WC2A 1AY, from which copies may be obtained.